



CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005



Job No.: CTCE/BBMP/W.No.07/BBU/WMM/Gradation/2016-17

10.01.2017

TEST REPORT ON GRADATION OF WET MIX MACADAM

* Customer	: Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	: Mr. B.B. Umesh, #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	: Providing and filling of potholes in Ward No.07, Byatarayapura, Kodigehalli Sub Division, BBMP, Bangalore.
* Reference	: BBMP/EE/BTP/WO/ /2016-17
Sample ID	: Wet Mix Macadam
Technical Reference	: IS 2386 (part-1)1963 (RA-2016)
Date of Testing	: 10.01.2017



Oven Dry Wt (gm): 5000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits As per Morth Table 400-11
53	0	0	0	100	100
45	135	135	2.7	97.3	95-100
22.4	1520	1655	33.10	66.90	60-80
11.2	1050	2705	54.10	45.90	40-60
4.75	550	3255	65.10	34.90	25-40
2.36	515	3770	75.40	24.60	15-30
0.600	520	4290	85.80	14.20	8-22
0.075	565	4855	97.10	2.90	0-8

*Information is furnished by the Customer/Representative.

Note:

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Asst. Exec. Eng. N.D. A.E. (W&T)

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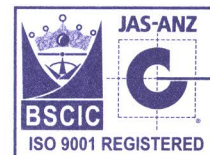


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* Reference	: BBMP/EE/BTP/WO/ /2016-17
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Oven Dry Wt (gm): 5000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits As per Morth Table 400-11
53	0	0	0	100	100
45	165	165	3.3	96.7	95-100
22.4	1505	1670	33.40	66.60	60-80
11.2	1150	2820	56.40	43.60	40-60
4.75	585	3405	68.10	31.90	25-40
2.36	535	3940	78.80	21.20	15-30
0.600	510	4450	89.00	11.00	8-22
0.075	400	4850	97.00	3.00	0-8

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Job No.: CTCE/BBMP/W.No.07/BBU/WMM/AIV/2016-17

10.01.2017

TEST REPORT ON IMPACT VALUE OF AGGREGATE

* Customer	: Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	: Mr. B.B. Umesh, #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	: Providing and filling of potholes in Ward No.07, Byatarayapura, Kodigehalli Sub Division, BBMP, Bangalore.
* Reference	: BBMP/EE/BTP/WO/ /2016-17
* Sample ID	: Wet Mix Macadam
Technical Reference	: IS: 2386 Part IV
Date of Testing	: 10.01.2017



Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	383	385	20.96
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	80	81	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	303	304	
4	Aggregate Impact value = percent fines $100 * (W_2/W_1) \%$	20.89	21.04	

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.07/BBU/WMM/Shape.T/2016-17

10.01.2017

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	: Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	: Mr. B.B. Umesh, #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	: Providing and filling of potholes in Ward No.07, Byatarayapura, Kodigehalli Sub Division, BBMP, Bangalore.
* Reference	: BBMP/EE/BTP/WO/ /2016-17
* Sample ID	: Wet Mix Macadam
Technical Reference	: IS 2386(Part 1) 1963 (RA 2016)
Date of Testing	: 10.01.2017



Sl.No.	Description	Result
1	Flakiness Index	12.35%
2	Elongation Index	13.96%
3	Combined Flakiness & Elongation Index	26.31%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.07/BBU/BC/AIV/2016-17

15.01.2017

TEST REPORT ON IMPACT VALUE OF AGGREGATES

* Customer	: Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	: Mr. B.B. Umesh, #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	: Providing and filling of potholes in Ward No.07, Byatarayapura, Kodigehalli Sub Division, BBMP, Bangalore.
* Reference	: BBMP/EE/BTP/WO/ /2016-17
* Sample ID	: Hot mix plant, Bangalore.
* Type of Mix	: Bituminous Concrete
Technical Reference	: IS: 2386 (Part- 4)-1963 (RA-2016)
Date of Testing	: 15.01.2017



Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	388	390	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	82	83	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	306	307	
4	Aggregate Impact value = percent fines $100 * (W_2/W_1)$ percent	21.13	21.28	21.21

*Information is furnished by the Customer/Representative.

Comments:

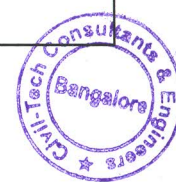
→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

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15.01.2017

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	: Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	: Mr. B.B. Umesh, #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	: Providing and filling of potholes in Ward No.07, Byatarayapura, Kodigehalli Sub Division, BBMP, Bangalore.
* Reference	: BBMP/EE/BTP/WO/ /2016-17
* Sample ID	: Hot mix plant, Bangalore
Technical Reference	: IS 2386 (Part 1) 1963 (RA 2016)
* Type of Mix	: Bituminous Concrete
Date of Testing	: 15.01.2017



Sl.No.	Description	Result
1	Flakiness Index	13.25%
2	Elongation Index	13.60%
3	Combined Flakiness & Elongation Index	26.85%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

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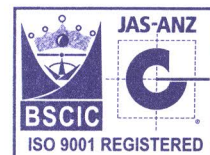


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Job No.: CTCE/BBMP/W.No.07/BBU/BC/Stripping/2016-17

15.01.2017

TEST REPORT ON STRIPPING VALUE OF ROAD AGGREGATES (STATIC IMMERSION TEST)

* Customer	: Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	: Mr. B.B. Umesh, #385, Bettahalur (P), Bangalore North Taluk.
* Name of Work	: Providing and filling of potholes in Ward No.07, Byatarayapura, Kodigehalli Sub Division, BBMP, Bangalore.
* Reference	: BBMP/EE/BTP/WO/ /2016-17
Technical Reference	: IS: 6241
* Type of Mix	: Bituminous Concrete
Date of Testing	: 15.01.2017



Type of binder : 60/70
Percentage of binder used : 5.00% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.00 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.1	3.20	96.80
2	3.2		
3	3.3		

*Information is furnished by the Customer/Representative.

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%

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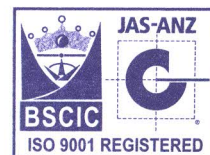


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Job No.: CTCE/BBMP/W.No.07/BBU/BC/Sp_Wa/2016-17

15.01.2017

TEST REEPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION

* Customer	: Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	: Mr. B.B. Umesh, #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	: Providing and filling of potholes in Ward No.07, Byatarayapura, Kodigehalli Sub Division, BBMP, Bangalore.
* Reference	: BBMP/EE/BTP/WO/ /2016-17
* Sample ID	: Hot mix plant, Bangalore
Technical Reference	: IS: 2386 (Part 3) 1963 (RA-2016)
* Type of Mix	: Bituminous Concrete
Date of Testing	: 15.01.2017



Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2001	2003	2004	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1239	1238	1249	
4	Weight of saturated surface dry aggregate in air	W_3 g	2022	2023	2025	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_s)$ g	783	785	776	
6	Weight of oven dried aggregate	W_4 g	2008	2010	2011	
7	Specific Gravity	$W_4 / (W_3 - W_s)$	2.564	2.561	2.591	2.572
8	Apparent Specific gravity	$W_4 / (W_4 - W_s)$	2.611	2.604	2.639	2.618
9	Water Absorption	$((W_3 - W_4) * 100) / W_4$	0.70%	0.65%	0.70%	0.68%

* Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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Job No: CTCE/BBMP/W.No.07/BBU/BC/Bitumen/2016-17

17.01.2017

TEST REPORT ON BITUMEN CONTENT OF BITUMINOUS CONCRETE MIX

* Customer	: Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	: Mr. B.B. Umesh, #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	: Providing and filling of potholes in Ward No.07, Byatarayapura, Kodigehalli Sub Division, BBMP, Bangalore.
* Reference	: BBMP/EE/BTP/WO/ /2016-17
* Sample ID	: Pothole filling to roads in Dasarahalli Ward No.15.
Technical Reference	: IRC:SP:11-1984
Date of Testing	: 17.01.2017



BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	469	470
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	31	30.00
7. Bitumen content in %	6.20	6.00
8. Average	6.10	

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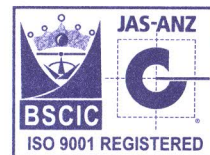


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Job No: CTCE/BBMP/W.No.07/BBU/BC/Bitumen/2016-17

17.01.2017

TEST REPORT ON BITUMEN CONTENT AFTER GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

* Customer	: Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	: Mr. B.B. Umesh, #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	: Providing and filling of potholes in Ward No.07, Byatarayapura, Kodigehalli Sub Division, BBMP, Bangalore.
* Reference	: BBMP/EE/BTP/WO/ /2016-17
* Sample ID	: Pothole filling to roads in Byatarayapura Ward No.07.
Technical Reference	: IS 2386 and IRC:SP:11-1984
Date of Testing	: 17.01.2017



GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	45.36	9.67	9.67	90.33	79-100
9.5	35.26	7.52	17.19	82.81	70-88
4.75	70.28	14.99	32.17	67.83	53-71
2.36	69.35	14.79	46.96	53.04	42-58
1.18	50.23	10.71	57.67	42.33	34-48
0.6	55.36	11.80	69.48	30.52	26-38
0.3	45.15	9.63	79.10	20.90	18-28
0.15	35.26	7.52	86.62	13.38	12-20
0.075	37.22	7.94	94.56	5.44	4-10

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	32.26	6.86	6.86	93.14	79-100
9.5	45.15	9.61	16.47	83.53	70-88
4.75	66.25	14.10	30.57	69.43	53-71
2.36	70.22	14.94	45.51	54.49	42-58
1.18	61.25	13.03	58.54	41.46	34-48
0.6	55.15	11.73	70.27	29.73	26-38
0.3	34.15	7.27	77.54	22.46	18-28
0.15	29.35	6.24	83.78	16.22	12-20
0.075	36.69	7.81	91.59	8.41	4-10

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